

CLAIMS

What is claimed is:

1. An electrophotographic image forming apparatus comprising:
 - a laser scanning unit to generate a laser beam;
 - a photosensitive medium on which the laser beam is incident to form an electrostatic latent image;
 - a developing roller to attach toner to a surface of the photosensitive medium to develop the electrostatic latent image;
 - a transfer roller to transfer the developed image to a paper sheet;
 - a charge roller to charge the surface of the photosensitive medium to a predetermined voltage;
 - a power supply to supply electric power to the transfer roller and the charge roller;
 - a transfer roller resistance detecting unit to detect a resistance of the charge roller;
 - an actual surrounding condition detecting unit to detect an actual surrounding condition of the charge roller; and
 - a controller to detect a surrounding condition from a resistance of the transfer roller, to compare the detected surrounding condition with the actual surrounding condition, and to generate a transfer roller exchange signal if the detected surrounding condition is not the same as the actual surrounding condition.
2. The electrophotographic image forming apparatus of claim 1, further comprising a display unit to indicate a time for a transfer roller exchange in response to the generated transfer roller exchange signal.
3. The electrophotographic image forming apparatus of claim 1, wherein the

surrounding condition is a temperature.

4. The electrophotographic image forming apparatus of claim 1, wherein the surrounding condition is a humidity.

5. The electrophotographic image forming apparatus of claim 1, further comprising:

a power supply line between the power supply and the transfer roller; and
an ammeter installed on the power supply line, wherein the transfer roller resistance detecting unit is the ammeter.

6. The electrophotographic image forming apparatus of claim 1, further comprising:

a power supply line between the power supply and the transfer roller; and
a voltmeter installed on the power supply line, wherein the transfer roller resistance detecting unit is the voltmeter.

7. The electrophotographic image forming apparatus of claim 1, wherein the actual surrounding condition detecting unit is a charge roller resistance detecting unit to detect the resistance of the charge roller.

8. The electrophotographic image forming apparatus of claim 7, further comprising:
a power supply line between the power supply and the transfer roller; and
a voltmeter installed on the power supply line, wherein the charge roller resistance detecting unit is the voltmeter.

9. The electrophotographic image forming apparatus of claim 7, further comprising:
a power supply line between the power supply and the transfer roller; and
an ammeter installed on the power supply line, wherein the charge roller resistance
detecting unit is the ammeter.
10. The electrophotographic image forming apparatus of claim 1, wherein the actual
surrounding condition detecting unit is a thermometer to detect a temperature around the
transfer roller.
11. The electrophotographic image forming apparatus of claim 1, further comprising
a paper discharge sensor to sense a discharge of a printed paper sheet.
12. A method of detecting a life span of a transfer roller of an electrophotographic
image forming apparatus, the method comprising:
detecting a surrounding condition of the transfer roller;
detecting an actual surrounding condition of the transfer roller;
comparing the surrounding condition with the actual surrounding condition; and
generating a transfer roller exchange signal based upon the comparing, comprising
generating the transfer roller exchange signal if the surrounding condition differs from the actual
surrounding condition.
13. The method of claim 12, further comprising indicating a time for a transfer roller
exchange in response to the transfer roller exchange signal.
14. The method of claim 12, wherein the surrounding condition is a temperature.

15. The method of claim 12, wherein the surrounding condition is a humidity.

16. The method of claim 12, wherein the detecting of the surrounding condition comprises detecting the surrounding condition from a resistance of the transfer roller.

17. The method of claim 12, wherein the detecting of the surrounding condition comprises detecting the surrounding from an electric current value of the transfer roller.

18. The method of claim 12, wherein the detecting of the surrounding condition comprises detecting the surrounding condition from a voltage value of the transfer roller.

19. The method of claim 12, wherein the detecting of the actual surrounding condition comprises detecting the actual surrounding condition from a resistance of a charge roller.

20. The method of claim 12, wherein the detecting of the actual surrounding condition comprises detecting the actual surrounding from an electric current value of a charge roller.

21. The method of claim 12, wherein the detecting of the actual surrounding condition comprises detecting the actual surrounding condition from a voltage value of a charge roller.

22. The method of claim 12, further comprising comparing a total number of printed pages with a threshold for a minimum number of printed pages.

23. An apparatus comprising:
a photosensitive medium;
a transfer roller to transfer an image from the photosensitive medium to a paper;
a charge roller to charge a surface of the photosensitive medium;
a first detector to detect an actual surrounding condition of the transfer roller;
a second detector to detect a reference surrounding condition of the transfer roller; and
a controller to compare the reference surrounding condition with the actual surrounding condition.

24. The apparatus of claim 23, wherein the controller generates a transfer roller replacement signal if the reference surrounding condition is not equal to the actual surrounding condition.

25. The apparatus of claim 24, further comprising a display to display a transfer roller replacement message in response to the transfer roller replacement signal.

26. The apparatus of claim 23, wherein the actual surrounding condition is determined from a resistance of the charge roller.

27. The apparatus of claim 23, wherein the reference surrounding condition is determined from a resistance of the transfer roller.

28. The apparatus of claim 23, wherein the first and second detectors are ammeters.

29. The apparatus of claim 23, wherein the actual and reference surrounding

conditions are temperatures.

30. The apparatus of claim 23, wherein the actual and reference surrounding conditions are humidities.

31. The apparatus of claim 23, wherein the actual surrounding condition is determined from an electric current in the charge roller.

32. The apparatus of claim 23, wherein the first and second detectors are voltmeters.

33. The apparatus of claim 23, wherein the reference surrounding condition is determined from an electric current in the transfer roller.

34. The apparatus of claim 23, wherein the second detector is a thermometer.

35. A method comprising:
detecting a reference surrounding condition of a transfer roller;
detecting an actual surrounding condition of a transfer roller; and
determining a time to replace the transfer roller if the reference surrounding condition differs from the actual surrounding condition.

36. The method of claim 35, wherein the determining the time to replace the transfer roller further comprises determining that a number of printed pages is greater than a predetermined number of printed pages.